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CANDIDA ALBICANS AND *CANDIDA DUBLINIENSIS* CELL-CELL SIGNALING: NEW PLAYERS IN MORPHOGENESIS AND BIOFILM REGULATION

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Signaling among microbial cells is thought to be part of community dynamics. In *Candida albicans*, cell-cell communication molecules are beginning to be highlighted, with a special focus on farnesol and tyrosol. The aim of this study was to identify signal molecules produced by biofilm-grown *Candida albicans* and *Candida dubliniensis*, and to evaluate the impact of the production of signal molecules on cell morphogenesis and biofilm development. Biofilm supernatants, of both species, obtained at 24, 48, 72 and 96 h of biofilm formation, were analyzed by headspace-solid-phase microextraction and gas chromatography-mass spectrometry. It was found that supernatants fractions of *C. albicans* and *C. dubliniensis* contained isoamyl alcohol, 2-phenylethanol, 1-dodecanol, nerolidol, and farnesol. The physiological effect of the commercial (pro-analysis) formulation of these alcohols was evaluated on planktonic cell morphology and biofilm formation capability of both organisms. Treatment of planktonic cultures of both species with the tested alcohols revealed a role in morphogenesis control, inhibiting the transition of yeast to filamentous form by up to 50%. The ability of these compounds to regulate *C. albicans* and *C. dubliniensis* biofilm formation was assessed by adding the alcohols at 0h and 3 h of adherence and on 48 h biofilms. Biofilms were analysed in terms of total biomass by crystal violet staining and cellular activity by the reduction of a tetrazolium salt (XTT). The results indicate that besides farnesol other molecules regulate biofilm formation (at earlier stages) for both species, but not mature biofilms (48 h), which are not sensitive to any of the molecules assayed. Overall, the results show that *C. albicans* and *C. dubliniensis* tightly regulate their physiological behaviour through metabolites produced during growth, evidencing the complexity of *C. albicans* and *C. dubliniensis* signaling systems.